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KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VP-436N

Presentation Switcher/Scaler

P/N: 2900-300149 Rev 4

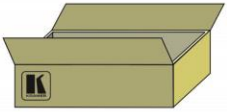
www.camboard.de Tel. 07131 911201ce-info@camboard.de
Fax 07131 911203

VP-436N Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- ☑ The **VP-436N** Presentation Switcher/Scaler
- ☑ IR remote control transmitter with batteries
- ☑ 1 Power cord
- ☑ 4 Rubber feet
- ☑ 1 Quick start guide
- ☑ 1 Set of rack ears



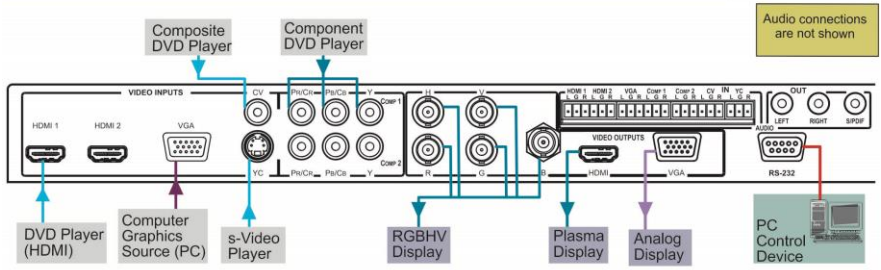
Save the original box and packaging materials in case your Kramer product needs to be returned to the factory for service.

Step 2: Install the VP-436N

Mount the machine in a rack or place on a table.

Step 3: Connect inputs and outputs

Always switch OFF the power on each device before connecting it to your **VP-436N**.



For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **VP-436N**.

Step 4: Connect the power

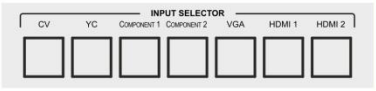
Connect AC power to the rear of the **VP-436N**, switch on its power and then switch on the power on each device.

Step 5: Operate via the front panel buttons and the remote control transmitter

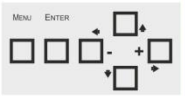
Push the MENU button to access the menu and show the main menu on your display.

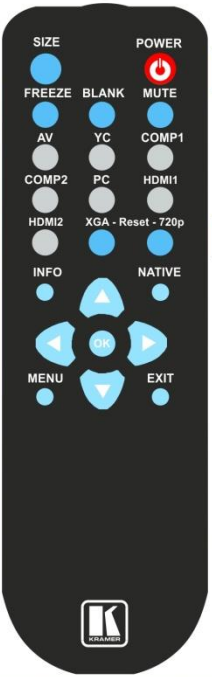
Toggle between blank and display.
Toggle between mute and the audio output.
Freeze/unfreeze the output image.

Select an input



Press the MENU button to access the menu.The arrow buttons and ENTER (OK) button let you navigate within the OSD menu. Press EXIT to exit the menu.





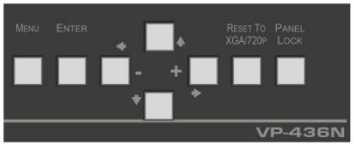
POWER
Cycles power

Reset the output resolution

If you cannot see an image, verify that the output cable to your display, TV, or projector is in good working order and is connected to the **VP-436N** and/or reset the output

Step 6: Configure the VP-436N via the OSD menu

Press the MENU button to open the OSD menu:



CONTRAST
BRIGHTNESS
FINETUNE
COLOR
SIZE
SOURCE
OUTPUT
AUDIO
OSD
FACTORY RESET
INFORMATION
AUTOSYNC
EXIT

Contents

1	**Introduction**	**1**
2	**Getting Started**	**2**
2.1	Achieving the Best Performance	2
2.2	Safety Instructions	3
2.3	Recycling Kramer Products	3
3	**Overview**	**4**
3.1	Defining the VP-436N Presentation Switcher/Scaler	5
4	**Installing in a Rack**	**8**
5	**Connecting the VP-436N**	**9**
6	**Controlling the VP-436N**	**11**
6.1	Controlling via the Front Panel Buttons	11
6.2	Using the OSD Menu	11
6.3	Connecting to the VP-436N via RS-232	14
6.4	Controlling via the Infrared Remote Control Transmitter	15
7	**Technical Specifications**	**16**
7.1	Input Resolutions	17
7.2	Default Communication Parameters	17
8	**RS-232 Communication Protocol**	**18**
8.1	RS-232 Protocol Table	19

Figures

Figure 1: VP-436N Presentation Switcher/Scaler Front Panel 6
Figure 2: VP-436N Presentation Switcher/Scaler Rear Panel 7
Figure 3: Connecting the VP-436N Presentation Switcher / Scaler 10
Figure 4: Infrared Remote Control Transmitter 15

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Video Products.

Congratulations on purchasing your Kramer **VP-436N** Presentation Switcher/Scaler. This product, which incorporates HDMI™ technology, is ideal for:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Home theater up-scaling

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2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

Go to http://www.kramerelectronics.com to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **VP-436N** away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

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2.2 Safety Instructions

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the power cord that is supplied with the unit

Warning: Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerelectronics.com/support/recycling/*.

3 Overview

The Kramer **VP-436N** is a high quality presentation switcher and scaler. It accepts one of seven inputs: a component video on RCA connectors, computer graphics on a 15-pin HD connector, composite video on an RCA connector, s-Video on a 4-pin connector and two HDMI signals. It scales the video, embeds the audio, and outputs the signal to the HDMI output as well as to a computer graphics output, an RGBHV video output together with a digital audio output and an analog stereo audio output.

Component video is also known as Y, Pb, Pr, or Y, Cb, Cr or YUV; compatible with both SD and HD component

The **VP-436N** is HDTV compatible and the resolution can be up- or down-scaled as follows: Native, VGA, SVGA, XGA, SXGA, UXGA, 480i, 480p, 576i, 576p, 720p (@50 and 60Hz), 1080i (@50 and 60Hz), 1080p (@50 and 60Hz), WXGA, WSXGA, WUXGA, 1280x800, 1440x900, 1400x1050 and 1600x900.

The **VP-436N** Presentation Switcher / Scaler:

- Has an improved HDMI output drive – exceeding 60 feet at 1080p 60Hz
- Has analog audio inputs and digital (S/PDIF) and analog stereo audio outputs with volume control
- Automatically detects and selects the audio source for the HDMI input. Default selection is HDMI – if this is not present, then the machine uses the audio from the analog input
- Comes with an On-Screen Display (OSD) for easy setup and adjustment, accessible via the IR remote control and via the front-panel buttons
- Is HDCP Compliant - the HDCP (High Definition Content Protection) license agreement allows copy-protected data on the HDMI input to pass only to the HDMI output
- Has a non-volatile memory that retains the last settings used
- Supports firmware upgrade via RS-232

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Control your **VP-436N**:

- Directly, via the front panel push buttons
- By RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller
- Remotely, from the infrared remote control transmitter

The **VP-436N** is housed in a 19" 1U rack mountable enclosure, with rack "ears" included, and is fed from a 100-240 VAC universal switching power supply.

3.1 Defining the VP-436N Presentation Switcher/Scaler

This section defines the **VP-436N**.

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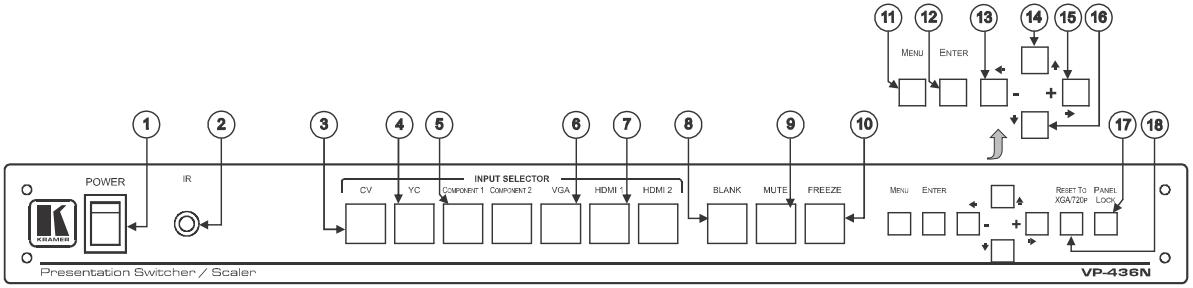


Figure 1: VP-436N Presentation Switcher/Scaler Front Panel

#	Feature		Function
1	POWER Switch		Illuminated switch for turning the unit ON or OFF
2	IR Receiver		Accepts IR remote commands
3	INPUT Selector Buttons	CV	Press to select the composite video input
4		YC	Press to select the s-Video input
5		COMPONENT	Press to select the component video input (from 1 to 2)
6		VGA	Press to select the computer graphics input
7		HDMI	Press to select the HDMI input (from 1 to 2)
8	BLANK Button		Press to toggle between a blank screen (blue or black screen) and the display (can be programmed to follow MUTE)
9	MUTE Button		Press to toggle between muting (blocking out the sound) and enabling the audio output (see Section 6.2.3)
10	FREEZE Button		Press to freeze/unfreeze the output video image (Can be programmed to follow MUTE)
11	MENU Button		Displays the OSD menu (see Section 6.2)
12	ENTER Button		Press to accept changes, change the SETUP parameters (see Section 6.2) and to auto adjust the image (when not within the OSD menu), see Section 6.1.1
13	- ⬅ Button		Press to decrease numerical values or select from several definitions. When not within the OSD menu mode, press to reduce volume (for embedded HDMI inputs, this does not affect the embedded output)
14	⬆ Button		Press to move up the menu list values (see Section 6.2)
15	+ ➡ Button		Press to increase numerical values or select from several definitions. When not within the OSD menu mode, press to increase volume (for embedded HDMI inputs, this does not affect the embedded output)
16	⬇ Button		Press to move down the menu list (see Section 6.2)
17	PANEL LOCK Button		Press and hold for about 2 seconds to lock/unlock the front panel buttons
18	RESET TO XGA/720P Button		Press to reset the video resolution to XGA or 720p Press and hold for about 2 seconds to toggle between reset to XGA and reset to 720p

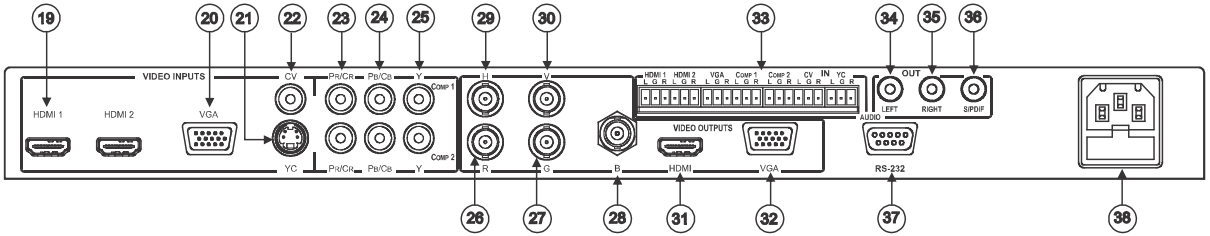


Figure 2: VP-436N Presentation Switcher/Scaler Rear Panel

#	Feature		Function
19	VIDEO INPUTS	*HDMI* Connector	Connect to the HDMI source (from 1 to 2)
20		*VGA* 15-pin HD Connector	Connect to the computer graphics source
21		*YC* 4-pin Connector	Connect to the s-Video source
22		*CV* RCA Connector	Connect to the composite video source
23		*PR/CR* RCA Connector	Connect to the component video source (from 1 to 2) For component video, connect all three connectors: Y, PR/CR, PB/CB (also known as YUV)
24		*PB/CB* RCA Connector	
25		*Y* RCA Connector	
26	VIDEO OUTPUTS	*R* BNC Connector	Connect to the RGBHV video acceptor
27		*G* BNC Connector	
28		*B* BNC Connector	
29		*H* BNC Connector	
30		*V* BNC Connector	
31		*HDMI* Connector	Connect to the HDMI acceptor
32		*VGA* 15-pin HD Connector	Connect to a VGA acceptor
33	*AUDIO IN* Unbalanced Stereo Terminal Block Connectors	HDMI	Connect to the analog audio HDMI source (from 1 to 2)
		VGA	Connect to the analog audio computer graphics source
		COMP	Connect to the analog audio component video source (from 1 to 2)
		CV	Connect to the analog audio composite video source
		YC	Connect to the analog audio s-Video source
34	*OUT* RCA Connectors	LEFT	Connect to the left stereo analog audio acceptor
35		RIGHT	Connect to the right stereo analog audio acceptor
36		S/PDIF	Connect to a digital audio acceptor
37	*RS-232* 9-pin D-sub Port		Connect to the PC or the remote controller
38	Power Connector with Fuse		AC connector, enabling power supply to the unit

4 Installing in a Rack

This section provides instructions for rack mounting the unit.

Before installing in a rack, be sure that the environment is within the recommended range:

OPERATING TEMPERATURE:	0º to +40ºC (32º to 104ºF)
STORAGE TEMPERATURE:	-40º to +70ºC (-40º to 158ºF)
HUMIDITY:	10% to 90%, RHL non-condensing

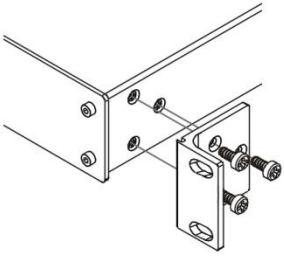
CAUTION!

When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site

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5 Connecting the VP-436N

Always switch off the power to each device before connecting it to your **VP-436N**. After connecting your **VP-436N**, connect its power and then switch on the power to each device.

You do not have to connect all the inputs and outputs, connect only those that are required.

To connect your **VP-436N**, as illustrated in the example in Figure 3, do the following:

1. Connect an HDMI source (for example, a DVD player) to the HDMI 1 VIDEO INPUT connector.
   Alternatively, you can connect the DVI connector on the DVD player to the HDMI connector on the VP-436N via a DVI-HDMI adapter. When using this adapter, you can connect the audio signal via the terminal block connector
2. Connect a computer graphics source to the VGA 15-pin HD VIDEO INPUT connector.
3. Connect a composite video source (for example, a composite video player) to the CV VIDEO INPUT RCA connector.
4. Connect an s-Video source (for example, an s-Video player) to the YC 4-pin VIDEO INPUT connector.
5. Connect a component video source (for example, a component video player) to the COMP 1 P_R, P_B and Y, VIDEO INPUT RCA connectors.
6. Connect the audio input signals to the AUDIO IN terminal block connectors, as required (not shown in Figure 3).
7. Connect the RGBHV VIDEO OUTPUT BNC connectors to an RGBHV acceptor (for example, an RGBHV display).
8. Connect the HDMI VIDEO OUTPUT connector to an HDMI acceptor (for example, a plasma display).

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9. Connect the VGA VIDEO OUTPUT 15-pin HD connector to a VGA acceptor (for example, a projector).

10. Connect the audio output signals to the OUT stereo analog audio acceptor and/or the digital audio acceptor, as required (not shown in Figure 3).

11. Connect the power cord (not shown in Figure 3).

12. If required, connect a PC via RS-232, see Section 6.3

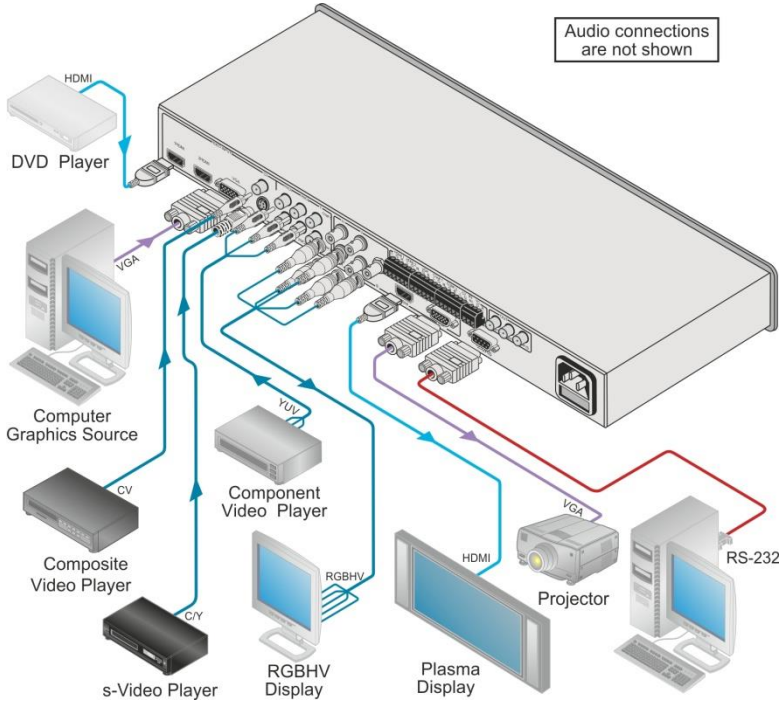

Figure 3: Connecting the VP-436N Presentation Switcher / Scaler

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6 Controlling the VP-436N

The **VP-436N** can be controlled via:

- The front panel buttons (see Section 6.1)
- The OSD menu (see Section 6.2)
- RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller (see Section 6.3)
- The infrared remote control transmitter (see Section 6.4)

6.1 Controlling via the Front Panel Buttons

The **VP-436N** includes the following front panel buttons:

- Input selector buttons for selecting the required input: CV, YC, COMPONENT (1 and 2), VGA or HDMI (1 and 2)
- BLANK, MUTE and FREEZE buttons
- MENU, ENTER, and up, down, left and right arrow buttons
- RESET TO XGA/720p and PANEL LOCK buttons

6.1.1 The Auto Adjust (Auto Tune) Feature

The auto adjust feature (which applies only to the VGA input) automatically centers the image on the screen when pressing the ENTER front panel button or the OK button on the remote control transmitter (when not within the OSD menu).
You can also implement this feature every time the input is switched to VGA or when the input resolution changes, via the FINE TUNE menu (see Section 6.2.2).

6.2 Using the OSD Menu

The control buttons let you control the **VP-436N** via the OSD menu. Press the:

- MENU button to enter the menu (the default timeout is set to 10 seconds)
- ENTER button to accept changes and to change the menu settings
- Arrow buttons to move through the OSD menu, which is displayed on the video output

On the OSD menu, select EXIT to exit the menu.

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6.2.1 The MAIN MENU

The range and default values vary according to the input signal.

<table>
<tr><th>Mode</th><th>Function</th></tr>
<tr><td>CONTRAST</td><td>Set the contrast
The range and default values vary according to the input signal</td></tr>
<tr><td>BRIGHTNESS</td><td>Set the brightness
The range and default values vary according to the input signal</td></tr>
<tr><td>FINETUNE</td><td>See Section 6.2.2</td></tr>
<tr><td>COLOR</td><td>Set the red, green and blue shades (0 to 100, default 48, 48 and 52 respectively)</td></tr>
<tr><td>SIZE</td><td>Select the size of the display: FULL, OVERSCAN, UNDER1, UNDER2, LETTER BOX and PANSCAN (FULL is the default)
UNDER1 refers to an underscan of 6%
UNDER2 refers to an underscan of 9%</td></tr>
<tr><td>SOURCE</td><td>Select the source: (VGA is the default)
<table>
<tr><th>Appears as:</th><th>Source input</th><th>Appears as:</th><th>Source input</th></tr>
<tr><td>CVBS</td><td>CV</td><td>PC</td><td>VGA</td></tr>
<tr><td>SVIDEO</td><td>YC</td><td>HDMI1</td><td>HDMI 1</td></tr>
<tr><td>YPBPR1</td><td>COMP 1</td><td>HDMI2</td><td>HDMI 2</td></tr>
<tr><td>YPBPR2</td><td>COMP 2</td><td></td><td></td></tr>
</table>
CVBS means Composite Video Baseband Signal</td></tr>
<tr><td>OUTPUT</td><td>Select the output resolution from the menu (NATIVE is the default):
<table>
<tr><th>Output resolution:</th><th>Appears as:</th><th>Output resolution:</th><th>Appears as:</th></tr>
<tr><td>1080i @60Hz</td><td>1080I60</td><td>1080i @59.94Hz</td><td>1080I59</td></tr>
<tr><td>1080p @60Hz</td><td>1080P60</td><td>1080p @59.94Hz</td><td>1080P59</td></tr>
<tr><td>576i</td><td>576I</td><td>1400x1050</td><td>SXGA+</td></tr>
<tr><td>576p</td><td>576P</td><td>1366x768</td><td>WXGA</td></tr>
<tr><td>720p @50Hz</td><td>720P50</td><td></td><td>NATIVE</td></tr>
<tr><td>1080i @50Hz</td><td>1080I50</td><td>640x480</td><td>VGA</td></tr>
<tr><td>1080p @50Hz</td><td>1080P50</td><td>800x600</td><td>SVGA</td></tr>
<tr><td>1280x800</td><td>1280x800</td><td>1024x768</td><td>XGA</td></tr>
<tr><td>1680x1050</td><td>WSXGA</td><td>1280x1024</td><td>SXGA</td></tr>
<tr><td>1920x1200</td><td>WUXGA</td><td>1600x1200</td><td>UXGA</td></tr>
<tr><td>1440x900</td><td>WSXGA+</td><td>480i</td><td>480I</td></tr>
<tr><td>480i @59.94Hz</td><td>480I59</td><td>480p</td><td>480P</td></tr>
<tr><td>480p @59.94 Hz</td><td>480P59</td><td>720p @60Hz</td><td>720P60</td></tr>
<tr><td>720p @59.94Hz</td><td>720P59</td><td></td><td></td></tr>
</table>
NATIVE - Select NATIVE to select the output resolution from the EDID of the connected HDMI monitor</td></tr>
<tr><td>AUDIO</td><td>See Section 6.2.3</td></tr>
<tr><td>OSD</td><td>Set the OSD parameters: H POSITION, V POSITION, TIMER, BACKGROUND and DISPLAY (see Section 6.2.4)</td></tr>
<tr><td>HDCP ON INPUT</td><td>Select the HDCP option for the HDMI input: either ON (the default) or OFF. Setting HDCP support to enabled (ON) on the HDMI input allows the</td></tr>
</table>

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Mode	Function
	source to transmit a non-HDCP signal if required (for example, when working with a Mac computer)
HDCP ON OUTPUT	Select FOLLOW INPUT or FOLLOW OUTPUT to define whether the HDCP will follow the input or the output (default FOLLOW OUTPUT). When FOLLOW INPUT is selected, it changes its HDCP output setting (for the HDMI output) according to the HDCP of the input. This option is recommended when the HDMI output is connected to a splitter/switcher (in this mode, switching may not be glitch-free) When FOLLOW OUTPUT is selected, the scaler matches its HDCP output to the HDCP setting of the HDMI acceptor to which it is connected
FACTORY RESET	Resets to the default parameters If you cannot see the display after factory reset, use the front panel Res. button to set the correct resolution: press continuously for 2 seconds to reset to XGA, or continuously for 5 seconds to reset to 720p
INFORMATION	Displays the source, the input resolution, the output resolution and the software version
AUTO SYNC OFF	Turn ON/OFF. When ON, a short period after not detecting a valid video signal on the selected input, the unit will disable the H and V syncs on the analog outputs until a valid input is again detected or any keypad button is pressed
EXIT	Select to exit the menu

6.2.2 The FINETUNE Menu

Input Signal	Parameter	Function
CV, YC, COMPONENT	HUE	Set the hue
	SATURATION	Set the saturation
	SHARPNESS	Set the sharpness
	NOISE REDUCTION	Select the noise reduction: OFF, HI, LOW and MID (middle)
	COLOR FILTER	Set to ON to enable color filtering
VGA	PHASE	Set the phase
	CLOCK	Set the clock frequency
	H-POSITION	Set the horizontal position of the picture
	V-POSITION	Set the vertical position of the picture
	AUTO TUNE	When set to ON, auto adjusts the image (centers it correctly on the screen) every time the input is switched to VGA or when the input resolution changes Alternatively, you can auto adjust the image by pressing the ENTER button when not within the OSD menu
	COLOR FILTER	Set to ON to enable color filtering
HDMI	COLOR FILTER	Set to ON to enable color filtering
	DROP LINES	Set it to ON to eliminate the green line (default is OFF) With some sources (mostly Apple devices) a green line sometimes appears at the bottom of the display. By factory default this option is set to OFF.

The COLOR FILTER feature may improve the output image for certain graphic cards where color fringing is seen.

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6.2.3 The AUDIO Menu

Parameter	Function
OUTPUT VOLUME	Set the output volume (from 0 to 100) This feature is disabled when the embedded audio of an HDMI input is selected
INPUT VOLUME	Set the input volume (from 0 to 100) This feature is disabled when the embedded audio of an HDMI input is selected
DELAY	Select the audio delay time: OFF, 40ms, 110ms and 150ms
SOUND	Select the sound options: ON, MUTE
MUTE FOLLOWS	Select the action that will be followed by mute: **INDEPENDENT**: the audio muting is independent of the FREEZE and BLANK functions **FREEZE** **BLANK** **FREEZE/BLANK**: when freezing or blanking the video, the audio will be muted (the MUTE function follows the FREEZE and the BLANK functions)
HDMI AUDIO IN	Select: **AUTOMATIC**: the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal) **EMBEDDED**: the embedded audio in the HDMI signal is selected **ANALOG**: the analog audio input is selected HDMI AUDIO IN is enabled only when one of the HDMI inputs is selected

6.2.4 The OSD Menu

Parameter	Function
H POSITION	Set the horizontal position of the OSD (from 0 to 100)
V POSITION	Set the vertical position of the OSD (from 0 to 100)
TIMER	Set the timeout period in seconds (from 5 to 100)
BACKGROUND	Set the OSD background between 0 (solid black) and 8 (transparent)
DISPLAY	Select the information shown on the screen during operation: **ON** - the information is shown permanently **OFF** - the information is not shown **INFO** - the information is shown for a few seconds

6.3 Connecting to the VP-436N via RS-232

You can connect to the **VP-436N** via an RS-232 connection using, for example, a PC. Note that a null-modem adapter/connection is not required.

To connect to the **VP-436N** via RS-232:

- Connect the RS-232 9-pin D-sub rear panel port on the **VP-436N** unit via a 9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC

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6.4 Controlling via the Infrared Remote Control Transmitter

You can control the **VP-436N** from the infrared remote control transmitter:

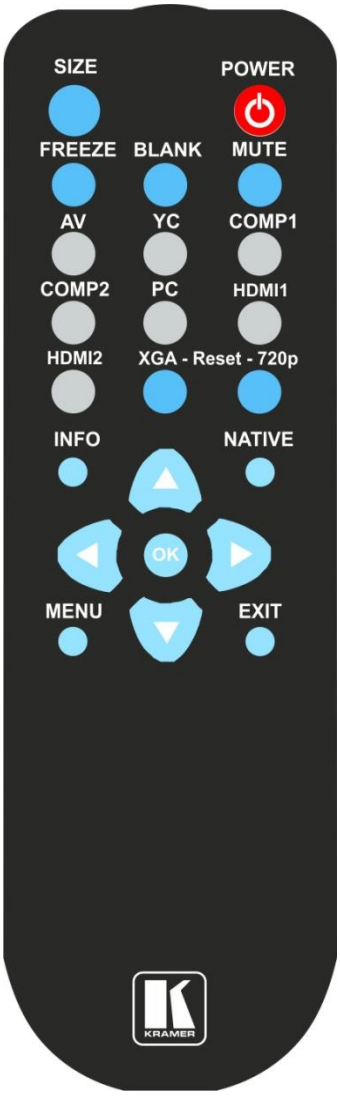
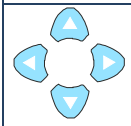


Figure 4: Infrared Remote Control Transmitter

Keys	Function
SIZE	Set the size of the image displayed
POWER	Turn the **VP-436N** ON or OFF (the outputs and the front-panel are disabled)
FREEZE	Freeze/unfreeze the output video image
BLANK	Toggle between a blank screen (blue or black screen) and the display
MUTE	Toggle between muting (blocking out the sound) and enabling the audio output
AV	Select the composite video input
YC	Select the s-Video input
COMP1	Select the component video 1 input
COMP2	Select the component video 2 input
PC	Select the UXGA input
HDMI1	Select the HDMI1 input
HDMI2	Select the HDMI2 input
XGA Reset	Reset the resolution to XGA
720p Reset	Reset the resolution to 720p
INFO	Displays the selected input, the input and output resolutions and the firmware versions on the OSD
NATIVE	Select the output resolution via the EDID of the connected HDMI monitor
	Four navigation keys When not in the OSD, the left and right arrows also control the output volume For embedded HDMI inputs, this does not affect the embedded output
OK	Press to accept changes Press also to auto adjust the picture (see Section 6.1.1)
MENU	Enter the OSD menu
EXIT	EXIT the menu

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7 Technical Specifications

INPUTS:	2 HDMI connectors 1 VGA on a 15-pin HD connector 1 composite video on an RCA connector 1 Y/C on a 4-pin connector 2 component video each on 3 RCA connectors 2 HDMI, 1 VGA, 2 COMP, 1 CV, 1 Y/C unbalanced stereo audio on 7 3-pin terminal block connectors
OUTPUT:	1 RGBHV on 5 BNC connectors 1 HDMI connector 1 VGA (RGBHV) on a 15-pin HD connector 1 S/PDIF on an RCA connector 1 unbalanced stereo audio on RCA connectors
H FREQUENCY:	15.63-90kHz
V FREQUENCY:	23-90Hz
RGB SYNCS:	H and V TTL separated syncs
RGB LEVEL:	1.2Vpp max, 75Ω load
XGA OUT LEVEL:	1.2Vpp max, 75Ω load
S/PDIF OUT LEVEL:	0.55Vpp constant
POWER SOURCE:	100−240V AC, 33VA max.
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
OUTPUT RESOLUTIONS:	Native, VGA, SVGA, XGA, SXGA, UXGA, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, WXGA, WSXGA, WUXGA, 1280x800, 1440x900, 1400x1050, 1600x900, 480i59.94, 480p59.94, 720p59.94, 1080i59.94, 1080p59.94
OUTPUT REFRESH RATE:	60Hz for computer graphics resolutions, 50/60Hz for HDTV resolutions
CONTROLS:	CV, YC, component 1, component 2, VGA, HDMI 1, HDMI 2, input selector buttons; blank, mute, freeze buttons; menu, enter, menu arrows, reset to XGA/720p, lock buttons, RS-232, IR
POWER SOURCE:	100-240V AC, 20VA max.
DIMENSIONS:	19" x 7" x 1U (W, D, H) rack mountable
WEIGHT:	2.7kg (6lbs) approx.
ACCESSORIES:	Power cord, null-modem adapter, rack ears, IR remote control
Specifications are subject to change without notice at http://www.kramerelectronics.com	

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7.1 Input Resolutions

Resolution/Refresh Rate	CV/s-Video	Component	PC	HDMI
480I/576I(NTSC/PAL)	Yes	Yes	No	Yes
480P/576P	No	Yes	No	Yes
720P@(60/50)	No	Yes	No	Yes
1080I@(60/50)	No	Yes	No	Yes
1080P@(60/50)	No	Yes	No	Yes
1080P@(24/25/30)	No	Yes	No	Yes
1080psF @(24/25/30)	No	No	No	No
480P/576P-RGB	No	No	Yes	Yes
720P@(60/50)-RGB	No	No	Yes	Yes
1080I@(60/50)-RGB	No	No	No	Yes
1080P@(60/50)-RGB	No	No	Yes	Yes
1080P@(24/25/30)-RGB	No	No	No	Yes
VGA@(60/67/72/75/85)	No	No	Yes	Yes
SVGA@(56/60/72/75)	No	No	Yes	Yes
XGA@(60/70/75)	No	No	Yes	Yes
SXGA@(60/75)	No	No	Yes	Yes
1280X960	No	No	Yes	Yes
1600X900@60	No	No	Yes	Yes
UXGA@60 (1600X1200)	No	No	Yes	Yes
WXGA@60 (1280x800)	No	No	Yes	Yes
WXGA+@60 (1440x900)	No	No	Yes	Yes
WXGA@60 (1366x768)	No	No	Yes	Yes
SXGA+@60 (1400x1050)	No	No	Yes	Yes
WSXGA@60 (1680x1050)	No	No	Yes	Yes
WUXGA@60 (1920x1200)	No	No	Yes	Yes
2k@50 (2048X1080)	No	No	Yes	Yes
2k@60 (2048X1080)	No	No	Yes	Yes

7.2 Default Communication Parameters

RS-232	
VP-436N Proprietary Protocol	
Baud Rate:	9600
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	HEX
Example (Select input source: HDMI1):	Y 3 0 6[CR]

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8 RS-232 Communication Protocol

The following is the COM port setting:

Baud Rate: 9600bps

Parity: None

Data Bits: 8bits

Stop Bits: 1bit

Set CTS Mode: Off

Set XON/XOFF: Off

Character Symbols Definitions	
Symbol	**Meaning**
□	Space
[CR]	Carriage Return, ASCII code 0x0D
[LF] or >	Line Feed, ASCII code 0x0A

Set and Get Command

Set Command:

Type in: Y■Control_Type■Function■Param[CR]

Reply: Z■Control_Type■Function■Param[CR][LF]

Get Command:

Type in: Y■Control_Type■Function[CR]

Reply: Z■Control_Type■Function■Param[CR][LF]

When sending a command, a blank character may precede [CR] if desired

Example:

Example 1: set brightness value as 32

Send: Y■1■16■32[CR]

Reply: Z■1■16■32[CR][LF]

Example 2: get current output resolution. (2 = SVGA)

Send: Y■4■21[CR]

Reply: Z■4■21■2[CR][LF]

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8.1 RS-232 Protocol Table

Control Type	Function	Param (for Set)	Function Description	Comment
0	0	N/A	SIZE button on remote control	
0	1	N/A	POWER button on remote control	
0	2	N/A	FREEZE button on remote control	
0	3	N/A	480p button on remote control	
0	4	N/A	576p button on remote control	
0	5	N/A	720p button on remote control	
0	6	N/A	1080i button on remote control	
0	7	N/A	1080p button on remote control	
0	8	N/A	VGA button on remote control	
0	9	N/A	SVGA button on remote control	
0	10	N/A	XGA button on remote control	
0	11	N/A	SXGA button on remote control	
0	12	N/A	WXGA button on remote control	
0	13	N/A	UXGA button on remote control	
0	14	N/A	INFO button on remote control	
0	15	N/A	UP button on remote control	
0	16	N/A	NATIVE button on remote control	
0	17	N/A	LEFT button on remote control/Volume down	Volume down when not in OSD
0	18	N/A	OK button on remote control	
0	19	N/A	RIGHT button on remote control/Volume up	Volume up when not in OSD
0	20	N/A	MENU button on remote control	
0	21	N/A	DOWN button on remote control	
0	22	N/A	EXIT button on remote control	
0	23	N/A	AV button on remote control	
0	24	N/A	YC button on remote control	
0	25	N/A	COMP1 button on remote control	
0	26	N/A	HDMI1 button on remote control	
0	27	N/A	HDMI2 button on remote control	
0	28	N/A	COMP2 button on remote control	
0	29	N/A	VGA button on remote control	
0	30	N/A	BLANK button on remote control	
0	31	N/A	MUTE button on remote control	
0	33	N/A	Auto adjust	FW V6.12
1: Set 2: Get	4	0~100	Color: Red	
1: Set 2: Get	5	0~100	Color: Green	
1: Set 2: Get	6	0~100	Color: Blue	

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Control Type	Function	Param (for Set)	Function Description	Comment
1: Set 2: Get	16	0~100	Brightness	
1: Set 2: Get	17	0~100	Contrast	
1: Set 2: Get	25	0~100	Hue	
1: Set 2: Get	26	0~100	Sharpness	
1: Set 2: Get	29	0~100	Saturation	
1: Set 2: Get	33	0~100	Set an absolute volume for Output	For embedded HDMI inputs, this does not affect the embedded output
1: Set 2: Get	34	0~100	Set an absolute volume for Input	For embedded HDMI inputs, this does not affect the embedded output
1: Set 2: Get	41	0~100	OSD Setting :H-Position	
1: Set 2: Get	42	0~100	OSD Setting: V-Position	
1: Set 2: Get	43	0~100	OSD Timeout	
1: Set 2: Get	44	0~8	OSD Background	
1: Set 2: Get	50	0~3	NR (Noise Reduction)	0: Off 1: Low 2: Mid 3: High
1: Set 2: Get	51	0~3	Audio delay	0: Off 1: 40ms 2: 110ms 3: 150ms
1: Set 2: Get	52	0~2	HDMI AUDIO IN	0 : AUTOMATIC 1 : EMBEDDED 2 : ANALOG
1: Set 2: Get	84	0~1	Auto Sync Off	0 : OFF 1 : ON
1: Set 2: Get	95	0~1	DROP LINE	0 : OFF 1 : ON
1: Set 2: Get	160	0~1	INPUT HDCP Option	0: OFF 1: ON (FW: 6.27)
1: Set 2: Get	161	0~1	OUTPUT HDCP Option	0 : Follow input (FW 6.29) 1 : Follow output
3: Set 4: Get	0	1~7	Select Input Source	1: AV 2: YC

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Control Type	Function	Param (for Set)	Function Description	Comment
				3: COMP1 4: COMP2 5: VGA 6: HDMI1 7: HDMI2
3: Set 4: Get	1	0~5	Size	0: Full 1: Panscan 2: Overscan 3: Underscan 4: Letterbox 5: Underscan2 6: BEST FIT
3: Set 4: Get	21	0~27	Output Resolution	0: Native 1: VGA 2: SVGA 3: XGA 4: SXGA 5: UXGA 6: 480i 7: 480p 8: 720p60 9: 1080i60 10: 1080p60 11: 576i 12: 576p 13: 720p50 14: 1080i50 15: 1080p50 16: WXGA 17: WSXGA 18: WUXGA 19: 1280x800, 20: WXGA+ (1440X900) 21: SXGA+ (1400X1050) 22: 1600x900 (F/W#1.32) 23: 480i59 24: 480p59 25: 720p59 26: 1080i59 27: 1080p59
3: Set	23	1	Factory Reset	
4: Get	24	0 ~ 24	INPUT Resolution	0: Unknown 1: VGA 2: SVGA 3: XGA 4: SXGA 5: UXGA 6: 480i 7: 480p

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Control Type	Function	Param (for Set)	Function Description	Comment
				8: 720p60 9: 1080i60 10 1080p60 11 576i 12 576p 13 720p50 14 1080i50 15 1080p50 16 WXGA 17 WSXGA 18 WUXGA 19 1280X800 20 WXGA+ 21 SXGA+ 22 1600X900 23 2048X1080/50 24 2048X1080/60
6: Set 7: Get	0	0~2	Power	0: Power Down 1: Power On 2: Firmware reset
6: Set 7: Get	1	0~1	Freeze	0: Off 1: On
6: Set 7: Get	2	0~1	Blank	0: Off 1: On
6: Set 7: Get	3	0~1	Mute	0: Off 1: On
6: Set 7: Get	4	0~1	Key lock	0: Off 1: On
6 : set 7 : get	140	0~1	Auto Tune (under fine tune)	0 : Clear Auto Tune 1 : Set Auto Tune

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SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

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